



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/534,730	03/27/2000	William Richard Saunders	VTIP3	5419

22208 7590 05/05/2005

ROBERTS ABOKHAIR & MARDULA
SUITE 1000
11800 SUNRISE VALLEY DRIVE
RESTON, VA 20191

EXAMINER

MEI, XU

ART UNIT	PAPER NUMBER
----------	--------------

2644

DATE MAILED: 05/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/534,730

Applicant(s)

SAUNDERS ET AL.

Examiner

Xu Mei

Art Unit

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 March 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 22-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 22-29 and 39 is/are rejected.
- 7) ☒ Claim(s) 30-38, 40 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Art Unit: 2644

DETAILED ACTION

1. The spacing of the lines of the specification is such as to make reading and entry of amendments difficult. New application papers with lines double spaced on good quality paper are required.

2. The claims are objected to because the lines are crowded too closely together, making reading and entry of amendments difficult. Substitute claims with lines one and one-half or double spaced on good quality paper are required. See 37 CFR 1.52(b).

3. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner, they have not been considered.

The information disclosure statement filed 3/27/2000 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that

Art Unit: 2644

portion which caused it to be listed; and all other information or that portion which caused it to be **listed in Form 1449**. It has been placed in the application file, but the information referred to therein has not been considered.

4. Claims 22-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 22 recites the limitation "said controller" in lines 5 and 7. There is insufficient antecedent basis for this limitation in the claim. It appears should be --heteronomous electronic controller means--as in line 2.

Claim 22 recites limitation "said portions are operable individually or in cooperation with one another to provide conventional broadband performance and adaptive narrowband noise suppression" is indefinite. The claim language as recited is unclear how the portions are being 'in cooperation' to each other to perform such function.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2644

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 22-29 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Twiney et al (US-4,953,217, hereafter, Twiney) in view of Nagami et al (US-5,404,409, hereafter, Nagami).

Regarding claim 22, Twiney discloses an personal ANC headset or system that including: a head support structure or headgear means (1); at least one electro-acoustic transducer means (speaker 14); at least one acoustic-electro sensing means (microphone 5); and the microphone 5 defining a zone (within the ear cup, for example), adjacent to at least one of a user's ears; attenuation control means (6, 7, 8, 10) is adapted to attenuate selected sound frequencies (filters 8, for example) in the sound field in the zone containing the speaker and the microphone; whereby the headset is adapted to cancel designated frequencies (high frequencies) within the zone to create an area of silence or relative silence to a users ears. Twiney discloses the attenuation control means in feedback control configuration for attenuating broadband noise; but fails to discloses feedforward control means for attenuating tonal noise

Art Unit: 2644

as claimed. It is old and well known in the ANC art to use both feedforward and feedback control means (heteronomous control) for improving the accuracy of producing active noise cancel sound. Nagami discloses an ANC system which including both feedforward and feedback signal control configurations or component portions for attenuating tonal and broadband noise, and a switch and switching control means for controlling/selecting feedforward or feedback signal path (i.e., individual portion of noise control, see Figs. 3-4). It would have been obvious to one of ordinary skill in the art to combines the teachings of Twiney and Nagami by including a feedforward control path for the personal ANC system with both feedforward and feedback noise attenuation control in order to provide better attenuation of specific noise frequency bands (both tonal and broadband noise) and improve the accuracy of producing the noise canceling sound (col. 1, lines 11-15 of Nagami) for the ANC headset.

Regarding claims 23-24, 26, 28-29 and 39, Nagami discloses the adaptive feedforward component portion utilizing the well known LMS algorithm for adaptive filtering process (FIR filter, with tap delay weight update as shown in Fig. 2). It is old and well known in the active noise control art to implement different types of adaptive filter have specific known or

Art Unit: 2644

available adaptive algorithm for increase stability and performance. And leaky LMS and filtered-x algorithm are well known adaptive algorithms for implement with FIR filter processing. Therefore, it would have been obvious to one of ordinary skill in the art to implement the specific well known LMS algorithm such as leaky LMS algorithm for the FIR filter of Nagami in order to provide improving stability and performance for the FIR filter as desired. As for claims 29, the signals processors of Twiney and Nagami including analog and digital hardware (DSP) for processing active noise canceling signals.

Regarding claims 25 and 27, the acoustic-electric transducer or microphones (5 in Twiney or 3 in Nagami) as shown by both Twiney and Nagami are both being constrained to remain within the radius of reverberation of the control actuator or noise canceling speaker.

7. Claims 30-38 and 40 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Art Unit: 2644

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kuo is made of record here as pertinent art to the claimed invention. Kuo discloses ANC systems for suppressing unwanted noise and implementation of different filter algorithms for FIR filter.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xu Mei whose telephone number is 571-272-7523. The examiner can normally be reached on Monday-Friday (9:30-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on 571-272-7564. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Xu Mei
Primary Examiner
Art Unit 2644
04/26/2005